

**IN THE CLAIMS**

Claims 1-4 (canceled)

5. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein both of the movable members comprise a bendable motion member, each bendable motion member providing at least one degree of freedom and the bending stiffness of the second movable member is greater than the bending stiffness of the first movable member.

6. (Original) The surgical instrument of claim 5 wherein each of the bendable motion members have two degree of freedom to provide motion in all directions.

7. (Original) The surgical instrument of claim 5 wherein the control handle comprises a push-pull tool actuation arrangement.

Claim 8 (canceled)

9. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft; and

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member;

wherein the tool movement with respect to the distal end of the elongated shaft is in the same direction of the control handle movement with respect to the proximal end of the elongated shaft.

Claims 10-12 (canceled)

13. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a distal movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a proximal movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said proximal movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said distal movable member;

wherein at least one of said movable members comprises a bendable motion member;

wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member;

further including another proximal movable member and another distal movable member for multi-modal controlled movement of the tool.

14. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

wherein the second movable member is able to axially rotate about the control handle.

15. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

further including a distal axial rotation joint for axially rotating the first movable member about the elongated shaft.

16. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

further including a distal axial rotation joint for axially rotating the tool about the first movable member.

17. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

further including distal and proximal rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.

18. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a first movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a second movable member;

whereby movement of said control handle with respect to said elongated instrument shaft via said second movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said first movable member;

wherein at least one of said first and second members comprises a bendable motion member;

further including a motion member locking mechanism for releasably locking said movable members;

said motion member locking mechanism comprising a locking mechanism for impeding cable means that extend between said movable members.

Claim 19 (canceled)

20. (Original) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a torque sensing member;

an electromechanical actuator coupled to said movable member;

wherein torque applied at said torque sensing member by the operator produces a proportional movement of said actuator, which in turn produces a movement of said tool with respect to said elongated instrument shaft via said movable member.

21. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal bendable member for coupling the proximal end of said elongated instrument shaft to said handle; and

actuation means extending between said distal and proximal bendable members whereby any deflection of said control handle with respect to said elongated instrument shaft causes a corresponding bending of said distal bendable member for control of said tool;

wherein at least one of said bendable members comprise a single unitary slotted structure that is readily capable of bending in any direction;

wherein said slotted structure is comprised of a plurality of separately disposed non-contiguous slots.

22. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal motion member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal motion member for coupling the proximal end of said elongated instrument shaft to said handle;

actuation means extending between said distal and proximal motion members for coupling motion of said proximal motion member to said distal motion member for controlling the positioning of said tool; and

a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

Claim 23 (canceled)

24. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;



a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal motion member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal motion member for coupling the proximal end of said elongated instrument shaft to said handle; and

actuation means extending between said distal and proximal motion members for coupling motion of said proximal motion member to said distal motion member for controlling the positioning of said tool;

at least one of said proximal and distal motion members comprising both a bendable section and a pivot section.

25. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal bendable member for coupling the proximal end of said elongated instrument shaft to said handle;

actuation means extending between said distal and proximal bendable members for coupling motion of said proximal bendable member to said distal bendable member for controlling the positioning of said tool;

a distal axial rotation joint at the tool end of the instrument; and

a proximal axial rotation joint;

said distal axial rotation joint responsive to said proximal axial rotation joint so that rotation of said proximal axial rotation joint causes a corresponding rotation of said distal axial rotation joint.

Claim 26 (canceled)

27. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal bendable member for coupling the proximal end of said elongated instrument shaft to said handle; and

actuation means extending between said distal and proximal bendable members for coupling motion of said proximal bendable member to said distal bendable member for controlling the positioning of said tool;

said proximal bendable member having a diameter that is different than the diameter of said distal bendable member.

Claim 28 (canceled)

29. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal bendable member for coupling the proximal end of said elongated instrument shaft to said handle; and

actuation means extending between said distal and proximal bendable members for coupling motion of said proximal bendable member to said distal bendable member for controlling the positioning of said tool;

wherein the instrument shaft is flexible for passage intraluminally;

further including a distal axial rotation joint for axially rotating at least one of the distal bendable member and tool relative to the instrument shaft.

30. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal motion member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal motion member for coupling the proximal end of said elongated instrument shaft to said handle;

actuation means extending between said distal and proximal motion members for coupling motion of said proximal motion member to said distal motion member for controlling the positioning of said tool; and

a capstan and cable arrangement connected between said handle and tool and including a pair of handles for control of a corresponding pair of tool jaws;

wherein said actuation means comprises cabling extending between and off-center of said motion members.

31. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal motion member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal motion member for coupling the proximal end of said elongated instrument shaft to said handle;

actuation means extending between said distal and proximal motion members for coupling motion of said proximal motion member to said distal motion member for controlling the positioning of said tool; and

wherein said proximal motion member comprises a bendable member and said distal motion member comprises a pivotal joint.

32. (Previously Presented) A medical instrument comprising:

an instrument shaft having proximal and distal ends;

a working member disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said working member being coupled to the distal end of said instrument shaft via a first movable member;

said control handle coupled to the proximal end of said instrument shaft via a second movable member;

whereby movement of said control handle with respect to said instrument shaft via said second movable member causes attendant movement of said working member with respect to said instrument shaft via said first movable member;

wherein both of the movable members comprise a bendable motion member, each bendable motion member providing at least one degree of freedom and the bending stiffness of the second movable member being different from the bending stiffness of the first movable member.

33. (Previously Presented) The medical instrument of claim 32 wherein the bending stiffness of the second bendable member is greater than the bending stiffness of the first bendable member.

34. (Previously Presented) The medical instrument of claim 32 wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member.

35. (Previously Presented) The medical instrument of claim 32 wherein the diameter of the second bendable member is greater than the diameter of the first bendable member.

36. (Previously Presented) The medical instrument of claim 32 wherein at least one of said first and second members comprises a bendable motion member that includes a plurality of separately disposed slots extending transverse to the longitudinal axis of the bendable motion member to enable lateral bending thereof.

37. (Previously Presented) The medical instrument of claim 36 wherein each said bendable motion member comprises a unitary non-jointed bendable member.

38. (Previously Presented) The surgical instrument of claim 32 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

39. (Previously Presented) The surgical instrument of claim 32 including a mechanism for locking the relative orientation between the first and second movable members at a predetermined position.

40. (Previously Presented) The surgical instrument of claim 32 including a distal axial rotation joint for axially rotating at least one of the second bendable member and tool relative to the instrument shaft.

41. (Previously Presented) The surgical instrument of claim 32 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the working member about a distal roll axis.

42. (Previously Presented) The surgical instrument of claim 9 wherein both of the movable members comprise a bendable motion member, and the bending stiffness of the second movable member is different than the bending stiffness of the first movable member.

43. (Previously Presented) The surgical instrument of claim 9 wherein the diameter of the second movable member is greater than the diameter of the first movable member.

44. (Previously Presented) The surgical instrument of claim 9 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

45. (Previously Presented) The surgical instrument of claim 9 including a mechanism for locking the relative orientation between the first and second movable members at a predetermined position.

46. (Previously Presented) The surgical instrument of claim 9 including a distal axial rotation joint for axially rotating at least one of the first bendable member and tool relative to the instrument shaft.

47. (Previously Presented) The surgical instrument of claim 9 including a rotation knob adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

48. (Previously Presented) The surgical instrument of claim 9 wherein said second motion member comprises a bendable member and said first motion member comprises a pivotal joint.

49. (Previously Presented) The surgical instrument of claim 13 wherein said elongated instrument shaft is flexible and further including a first shaft section connecting the proximal motion members and a second shaft section connecting the distal motion members.

50. (Previously Presented) The surgical instrument of claim 13 wherein the maximum transverse cross-sectional dimension of the proximal movable member is different than that of the distal movable member.

51. (Previously Presented) The surgical instrument of claim 50 wherein both movable members are bendable members, and the diameter and bending stiffness of the proximal bendable member is greater than the diameter and bending stiffness of the distal bendable member.

52. (Previously Presented) The surgical instrument of claim 13 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

53. (Previously Presented) The surgical instrument of claim 13 including a mechanism for locking the relative orientation between the distal and proximal movable members at a predetermined position.

54. (Previously Presented) The surgical instrument of claim 13 further including distal and proximal axial rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.

55. (Previously Presented) The surgical instrument of claim 13 including a distal axial rotation joint for axially rotating at least one of the distal movable member and tool relative to the instrument shaft.

56. (Previously Presented) The surgical instrument of claim 13 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

57. (Previously Presented) The surgical instrument of claim 13 wherein said proximal movable member comprises a bendable member and said distal movable member comprises a pivotal joint.

58. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said tool being coupled to the distal end of said elongated instrument shaft via a distal movable member;

said control handle coupled to the proximal end of said elongated instrument shaft via a proximal movable member;



whereby movement of said control handle with respect to said elongated instrument shaft via said proximal movable member causes attendant movement of said tool with respect to said elongated instrument shaft via said distal movable member;

wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member;

further including another proximal movable member and another distal movable member for multi-modal controlled movement of the tool.

59. (Previously Presented) The surgical instrument of claim 58 wherein both movable members are bendable members, and the diameter of the proximal bendable member is different than the diameter of the distal bendable member.

60. (Previously Presented) The surgical instrument of claim 59 wherein the diameter and bending stiffness of the proximal bendable member is greater than the diameter and bending stiffness of the distal bendable member.

61. (Previously Presented) The surgical instrument of claim 58 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

62. (Previously Presented) The surgical instrument of claim 58 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and proximal movable member.

63. (Previously Presented) The surgical instrument of claim 58 including a mechanism for locking the relative orientation between the distal and proximal movable members at a predetermined position.

64. (Previously Presented) The surgical instrument of claim 58 further including distal and proximal axial rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.

65. (Previously Presented) The surgical instrument of claim 58 including a distal axial rotation joint for axially rotating at least one of the distal movable member and tool relative to the instrument shaft.

66. (Previously Presented) The surgical instrument of claim 58 wherein said proximal movable member comprises a bendable member and said distal movable member comprises a pivotal joint.

67. (Previously Presented) The surgical instrument of claim 14 including distal and proximal axial rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.

68. (Previously Presented) The surgical instrument of claim 14 wherein the first movable member is able to axially rotate relative to the tool.

69. (Previously Presented) The surgical instrument of claim 14 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a roll axis.

70. (Previously Presented) The surgical instrument of claim 14 wherein both movable members are bendable members, and the maximum transverse cross-sectional dimension of the second bendable member is different than that of the first bendable member.

71. (Previously Presented) The surgical instrument of claim 14 including a mechanism for locking the relative orientation between the first and second movable members at a predetermined position.

72. (Previously Presented) The surgical instrument of claim 14 wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member.

73. (Previously Presented) The surgical instrument of claim 14 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

74. (Previously Presented) The surgical instrument of claim 14 wherein said second motion member comprises a bendable member and said first motion member comprises a pivotal joint.

75. (Previously Presented) An instrument comprising:

an instrument shaft having proximal and distal ends;

a working member disposed from the distal end of the instrument shaft; and

a control handle disposed from the proximal end of the instrument shaft;

said working member being coupled to the distal end of said instrument shaft via a distal movable member;

said control handle coupled to the proximal end of said instrument shaft via a proximal movable member;

whereby movement of said control handle with respect to said instrument shaft via said proximal movable member causes attendant movement of said working member with respect to said instrument shaft via said distal movable member;

wherein the proximal movable member is able to axially rotate relative to the control handle.

76. (Previously Presented) The instrument of claim 75 wherein the distal movable member is able to axially rotate relative to the working member.

77. (Previously Presented) The instrument of claim 75 further including distal and proximal rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.

78. (Previously Presented) The surgical instrument of claim 75 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

79. (Previously Presented) The surgical instrument of claim 75 wherein both movable members are bendable members, and the maximum transverse cross-sectional dimension of the second bendable member is different than that of the first bendable member.

80. (Previously Presented) The surgical instrument of claim 75 including a mechanism for locking the relative orientation between the proximal and distal movable members at a predetermined position.

81. (Previously Presented) The surgical instrument of claim 75 wherein said proximal movable member comprises a bendable member and said distal movable member comprises a pivotal joint.

82. (Previously Presented) The surgical instrument of claim 75 wherein said proximal movable member comprises a unitary slotted structure including a plurality of separately disposed non-contiguous slots.

83. (Previously Presented) The surgical instrument of claim 15 further including a proximal axial rotation joint for axially rotating the second movable member about the elongated shaft.

84. (Previously Presented) The surgical instrument of claim 83 wherein the proximal axial rotation joint controls the distal axial rotation joint.

85. (Previously Presented) The surgical instrument of claim 15 wherein the instrument shaft is flexible for passage intraluminally.

86. (Previously Presented) The surgical instrument of claim 15 wherein both movable members are bendable members, and the maximum transverse cross-sectional dimension of the second bendable member is different than that of the first bendable member.

87. (Previously Presented) The surgical instrument of claim 15 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

88. (Previously Presented) The surgical instrument of claim 15 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

89. (Previously Presented) The surgical instrument of claim 15 including a mechanism for locking the relative orientation between the distal and proximal movable members at a predetermined position.

90. (Previously Presented) The surgical instrument of claim 15 wherein said second movable member comprises a bendable member and said first movable member comprises a pivotal joint.

91. (Previously Presented) The surgical instrument of claim 15 wherein said second movable member comprises a unitary slotted structure including a plurality of separately disposed non-contiguous slots.

92. (Previously Presented) The surgical instrument of claim 16 further including a proximal axial rotation joint for axially rotating the handle relative to the second movable member.

93. (Previously Presented) The surgical instrument of claim 92 wherein the proximal axial rotation joint controls the distal axial rotation joint.

94. (Previously Presented) The surgical instrument of claim 16 wherein the instrument shaft is flexible for passage intraluminally.

95. (Previously Presented) The surgical instrument of claim 16 wherein both movable members are bendable members, and the maximum transverse cross-sectional dimension of the second bendable member is different than that of the first bendable member.

96. (Previously Presented) The surgical instrument of claim 16 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a roll axis.

97. (Previously Presented) The surgical instrument of claim 16 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

98. (Previously Presented) The surgical instrument of claim 16 including a mechanism for locking the relative orientation between the distal and proximal movable members at a predetermined position.

99. (Previously Presented) The surgical instrument of claim 16 wherein said second movable member comprises a bendable member and said first movable member comprises a pivotal joint.

100. (Previously Presented) The surgical instrument of claim 16 wherein said second movable member comprises a unitary slotted structure including a plurality of separately disposed non-contiguous slots.

101. (Previously Presented) The surgical instrument of claim 17 wherein said proximal axial rotation joint is disposed between said second movable member and instrument shaft and said distal axial rotation joint is disposed between said first movable member and instrument shaft.

102. (Previously Presented) The surgical instrument of claim 17 wherein said proximal axial rotation joint is disposed between said second movable member and said control handle and said distal axial rotation joint is disposed between said first movable member and said tool.

103. (Previously Presented) The surgical instrument of claim 17 wherein the instrument shaft is flexible for passage intraluminally.

104. (Previously Presented) The surgical instrument of claim 17 wherein both movable members are bendable members, and the maximum cross-sectional dimension of the second bendable member is different than that of the first bendable member.

105. (Previously Presented) The surgical instrument of claim 17 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

106. (Previously Presented) The surgical instrument of claim 17 including a mechanism for locking the relative orientation between the first and second movable members at a predetermined position.

107. (Previously Presented) The surgical instrument of claim 17 wherein said second movable member comprises a bendable member and said first movable member comprises a pivotal joint.

108. (Previously Presented) The surgical instrument of claim 17 wherein said second movable member comprises a unitary slotted structure including a plurality of separately disposed non-contiguous slots.

109. (Previously Presented) The surgical instrument of claim 18 wherein said motion member locking mechanism is operatively disposed adjacent said handle and in a position for being selectively manipulated by a user.

110. (Previously Presented) The surgical instrument of claim 18 including a second locking mechanism that releasably retains the position of the second movable member relative to the instrument shaft.

111. (Previously Presented) The surgical instrument of claim 110 wherein the second locking mechanism includes a locked and unlocked state, in the locked state locking the position of the second movable member relative to the instrument shaft, and in the unlocked state enabling rotation of the second movable member relative to the instrument shaft to change the relative orientation between the proximal and distal movable members.

112. (Previously Presented) The surgical instrument of claim 111 wherein the second locking mechanism is disposed at the proximal end of the instrument shaft and slides longitudinally between the locked and unlocked states.

113. (Previously Presented) The surgical instrument of claim 18 wherein the locking mechanism is disposed at the proximal end of the instrument shaft.

114. (Previously Presented) The surgical instrument of claim 18 wherein the locking mechanism fixes the orientation of the first and second movable members by immobilizing said cable means.

115. (Previously Presented) The surgical instrument of claim 114 wherein said cable means includes mechanical cabling and said locking mechanism includes a collar and wedge.

116. (Previously Presented) The surgical instrument of claim 115 wherein said collar slides longitudinally relative to said wedge to pinch the mechanical cabling.

117. (Previously Presented) The surgical instrument of claim 116 including a cable guide for supporting the mechanical cabling with the mechanical cabling pinched between the guide and one of the collar and wedge.

118. (Previously Presented) The surgical instrument of claim 18 wherein the maximum transverse cross-sectional dimension of the second movable member is different than that of the first movable member.

119. (Previously Presented) The surgical instrument of claim 18 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and second movable member.

120. (Previously Presented) The surgical instrument of claim 18 including distal and proximal axial rotation joints wherein the proximal axial rotation joint actuates the distal axial rotation joint.



121. (Previously Presented) The surgical instrument of claim 18 including a distal axial rotation joint for axially rotating at least one of the first bendable member and tool relative to the instrument shaft.

122. (Previously Presented) The surgical instrument of claim 18 including a rotation knob adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

123. (Previously Presented) The surgical instrument of claim 18 wherein said second movable member comprises a bendable member and said first movable member comprises a pivotal joint.

124. (Previously Presented) The surgical instrument of claim 20 wherein said electromechanical actuator is disposed at said instrument shaft.

125. (Previously Presented) The surgical instrument of claim 20 wherein said electromechanical actuator is disposed remote from said instrument shaft.

126. (Previously Presented) The surgical instrument of claim 20 including cabling interconnecting the electromechanical actuator and said movable member for controlling the movement of said tool.

127. (Previously Presented) The surgical instrument of claim 20 further including a proximal axial rotation joint for axially rotating the handle relative to the second movable member.

128. (Previously Presented) The surgical instrument of claim 20 further including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a roll axis.

129. (Previously Presented) The surgical instrument of claim 20 including a mechanism for locking the relative orientation between the movable member and torque sensing member.

130. (Previously Presented) The surgical instrument of claim 20 including a distal axial rotation joint for axially rotating at least one of the movable member and tool relative to the instrument shaft.

131. (Previously Presented) The surgical instrument of claim 21 wherein said bendable member includes a plurality of separately disposed slots extending transverse to the longitudinal axis of the bendable member to enable lateral bending thereof.

132. (Previously Presented) The surgical instrument of claim 21 wherein said bendable member comprises a unitary non-jointed bendable member.

133. (Previously Presented) The surgical instrument of claim 21 wherein said slots are defined by a plurality of separate ribs having at least one ridge coupled between adjacent ribs.

134. (Previously Presented) The surgical instrument of claim 133 including a plurality of ridges between adjacent ribs.

135. (Previously Presented) The surgical instrument of claim 134 wherein the ridges are disposed in opposite positions.

136. (Previously Presented) The surgical instrument of claim 21 wherein at least said proximal bendable member comprises a unitary non-jointed bendable member that is supported in-line with and controllable from said handle for bending into a curved configuration without any sharp breaks or angularity, so as to, in turn, control said distal bendable member for corresponding bending.

137. (Previously Presented) The surgical instrument of claim 21 further including a rotation member adjacent the control handle rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

138. (Previously Presented) The surgical instrument of claim 21 including a mechanism for locking the relative orientation between the distal and proximal bendable members at a predetermined position.

139. (Previously Presented) The surgical instrument of claim 21 wherein the maximum transverse cross-sectional dimension of the proximal bendable member is different than that of the distal bendable member.

140. (Previously Presented) The surgical instrument of claim 21 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and proximal bendable member.

141. (Previously Presented) The surgical instrument of claim 21 including a distal axial rotation joint for axially rotating at least one of the distal bendable member and tool relative to the instrument shaft.

142. (Previously Presented) The surgical instrument of claim 22 wherein both said motion members are bendable members and said actuation means comprises cabling that couples between said proximal and distal bendable members, whereby manipulation of said proximal bendable member from said handle controls bending of said distal bendable member via said cabling.

143. (Previously Presented) The surgical instrument of claim 142 wherein said proximal bendable member has a diameter that is different than the diameter of said distal bendable member.

144. (Previously Presented) The surgical instrument of claim 142 including a mechanism for locking the relative orientation between the proximal and distal motion members at a predetermined position by means of a cable restraining device that holds the cables in a pre-selected state.

145. (Previously Presented) The surgical instrument of claim 22 including a distal axial rotation joint for axially rotating at least one of the distal motion member and tool relative to the instrument shaft.

146. (Previously Presented) The surgical instrument of claim 22 wherein at least one of said motion members comprises a flexible unitary multi-slotted structure including multiple discs that define multiple slots that are separate and non-contiguous.

147. (Previously Presented) The surgical instrument of claim 22 wherein the control handle is able to axially rotate relative to at least one of the instrument shaft and proximal motion member.

148. (Previously Presented) The surgical instrument of claim 22 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

149. (Previously Presented) The surgical instrument of claim 22 wherein said proximal motion member comprises a bendable member and said distal motion member comprises a pivotal joint.

150. (Previously Presented) The surgical instrument of claim 24 wherein said distal motion member comprising both a bendable section and a pivot section.

151. (Previously Presented) The surgical instrument of claim 24 wherein said proximal motion member comprising both a bendable section and a pivot section.

152. (Previously Presented) The surgical instrument of claim 24 wherein both said motion members comprising both a bendable section and a pivot section.

153. (Previously Presented) The surgical instrument of claim 24 further including a rotation member adjacent the control handle rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

154. (Previously Presented) The surgical instrument of claim 24 further including a motion member locking mechanism.

155. (Previously Presented) The surgical instrument of claim 24 including a distal axial rotation joint for axially rotating at least one of the distal motion member and tool relative to the instrument shaft.

156. (Previously Presented) The surgical instrument of claim 24 wherein the maximum transverse cross-sectional dimension of the proximal motion member is different than that of the distal motion member.

157. (Previously Presented) The surgical instrument of claim 25 wherein said proximal axial rotation joint is disposed between said proximal bendable member and instrument shaft and said distal axial rotation joint is disposed between said distal bendable member and instrument shaft.

158. (Previously Presented) The surgical instrument of claim 25 wherein said proximal axial rotation joint is disposed between said proximal bendable member and handle and said distal axial rotation joint is disposed between said distal bendable member and tool.

159. (Previously Presented) The surgical instrument of claim 25 wherein the instrument shaft is flexible for passage intraluminally.

160. (Previously Presented) The surgical instrument of claim 25 wherein the maximum transverse cross-sectional dimension of the proximal bendable member is different than that of the distal bendable member.

161. (Previously Presented) The surgical instrument of claim 25 including a mechanism for locking the relative orientation between the distal and proximal bendable members at a predetermined position.

162. (Previously Presented) The surgical instrument of claim 25 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

163. (Previously Presented) The surgical instrument of claim 27 wherein said proximal bendable member has a diameter that is greater than the diameter of said distal bendable member.

164. (Previously Presented) The surgical instrument of claim 27 wherein the proximal bendable member is able to axially rotate relative to the control handle.

165. (Previously Presented) The surgical instrument of claim 27 including a mechanism for locking the relative orientation between the proximal and distal bendable members.

166. (Previously Presented) The surgical instrument of claim 27 including a distal axial rotation joint for axially rotating at least one of the distal bendable member and tool relative to the instrument shaft.

167. (Previously Presented) The surgical instrument of claim 27 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

168. (Previously Presented) The surgical instrument of claim 29 further including a proximal axial rotation joint for axially rotating at least one of the proximal bendable member and handle relative to the instrument shaft.

169. (Previously Presented) The surgical instrument of claim 29 wherein said distal axial rotation joint is responsive to said proximal axial rotation joint so that rotation of said proximal axial rotation joint causes a corresponding rotation of said distal axial rotation joint.

170. (Previously Presented) The surgical instrument of claim 29 said proximal bendable member having a maximum transverse cross-sectional dimension that is different than that of said distal bendable member.

171. (Previously Presented) The surgical instrument of claim 29 wherein the transverse cross-sectional area of the proximal bendable member is greater than that of the distal bendable member.

172. (Previously Presented) The surgical instrument of claim 29 including a mechanism for locking the relative orientation between the distal and proximal bendable members at a predetermined position.

173. (Previously Presented) The surgical instrument of claim 29 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

174. (Previously Presented) The surgical instrument of claim 30 including at least one handle end capstan and at least one tool end capstan.

175. (Previously Presented) The surgical instrument of claim 174 including a pair of handle capstans associated respectively with said pair of handles and a pair of tool capstans associated respectively with said pair of tool jaws.

176. (Previously Presented) The surgical instrument of claim 30 wherein said proximal motion member comprises a bellows.

177. (Previously Presented) The surgical instrument of claim 30 wherein said proximal motion member comprises a unitary slotted structure that includes multiple discs that define multiple slots that are separate and non-contiguous.

178. (Previously Presented) The surgical instrument of claim 31 wherein said proximal bendable member comprises a unitary slotted structure that is comprised of multiple discs that define multiple slots that are separate and non-contiguous.

179. (Previously Presented) The surgical instrument of claim 31 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a roll axis.

180. (Previously Presented) The surgical instrument of claim 31 including a distal axial rotation joint for axially rotating at least one of the distal motion member and tool relative to the instrument shaft.

181. (Previously Presented) The surgical instrument of claim 31 including a mechanism for locking the relative orientation between the proximal and distal members.

182. (Previously Presented) An instrument comprising:

an instrument shaft having proximal and distal ends;

a proximal turnable member;

a control handle coupled to the proximal end of the instrument shaft via the proximal turnable member;

a distal turnable member

a working member coupled to the distal end of said instrument shaft via the distal turnable member;

a control element that intercouple between said proximal and distal turnable members so that a deflection of the control handle at the proximal turnable member causes a deflection of the working member via the distal turnable member

wherein at least one of the proximal and distal turnable members comprises a bendable motion member;

and a linear actuator for controlling the translation of the instrument shaft.

183. (Previously Presented) The instrument of claim 182 including an input device at the control handle to control the linear actuator.

184. (Previously Presented) The instrument of claim 182 including a force sensing element mounted on either the shaft or a carriage of the linear actuator to detect the translation force.

185. (Previously Presented) The instrument of claim 182 wherein the instrument shaft is flexible for passage intraluminally.



186. (Previously Presented) The instrument of claim 182 including a distal axial rotation member.

187. (Previously Presented) A surgical instrument comprising:

an elongated instrument shaft having proximal and distal ends;

a tool disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said elongated instrument shaft to said tool;

a proximal bendable member for coupling the proximal end of said elongated instrument shaft to said handle; and

actuation means extending between said distal and proximal bendable members for coupling motion of said proximal bendable member to said distal bendable member for controlling the positioning of said tool;

said proximal bendable member having a maximum transverse cross-sectional dimension that is different than that of said distal bendable member.

188. (Previously Presented) The surgical instrument of claim 187 wherein the proximal bendable member is able to axially rotate relative to the control handle.

189. (Previously Presented) The surgical instrument of claim 187 including a mechanism for locking the relative orientation between the proximal and distal bendable members.

190. (Previously Presented) The surgical instrument of claim 187 including a distal axial rotation joint for axially rotating at least one of the distal bendable member and tool relative to the instrument shaft.

191. (Previously Presented) The surgical instrument of claim 187 including a rolling-motion wheel adjacent the control handle and rotatable relative to the control handle for causing a corresponding rotation of the tool about a distal tool roll axis.

192. (New) An instrument comprising:

an instrument shaft having proximal and distal ends;

a working member disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

said working member being coupled to the distal end of said instrument shaft by a distal bendable member;

said control handle coupled to the proximal end of said instrument shaft via a proximal bendable member;

whereby movement of said control handle with respect to said instrument shaft via said proximal bendable member causes attendant movement of said working member with respect to said instrument shaft via said distal bendable member;

and cables that connect said proximal and distal bendable members;

wherein said cables are disposed at a different radial distance from the center of the proximal bendable member as compared to the distal bendable member.

193. (New) The surgical instrument of claim 192 wherein the radial distance to the cable at the proximal bendable member is greater than the radial distance to the cable at the distal bendable member.

194. (New) The surgical instrument of claim 192 wherein the cable at each bendable member is maintained at the same radial distance along the bendable member.

195. (New) An instrument comprising:

an instrument shaft having proximal and distal ends;

a working member disposed from the distal end of the instrument shaft;

a control handle disposed from the proximal end of the instrument shaft;

a distal bendable member for coupling the distal end of said instrument shaft to said working member;

a proximal bendable member for coupling the proximal end of said instrument shaft to said handle;

and actuating means extending between said distal and proximal bendable members for coupling motion of said proximal bendable member to said distal bendable member for controlling the positioning of said working member;

said actuating means comprising cables that are arranged so that each cable is disposed a first radial distance from the center of the distal bendable member and a second radial distance from the center of the proximal bendable member;

said first and second radial distances being different.

196. (New) The instrument of claim 195 wherein the second radial distance is greater than the first radial distance.